

High-Power Optical Amplifier

PTA5102Y-16



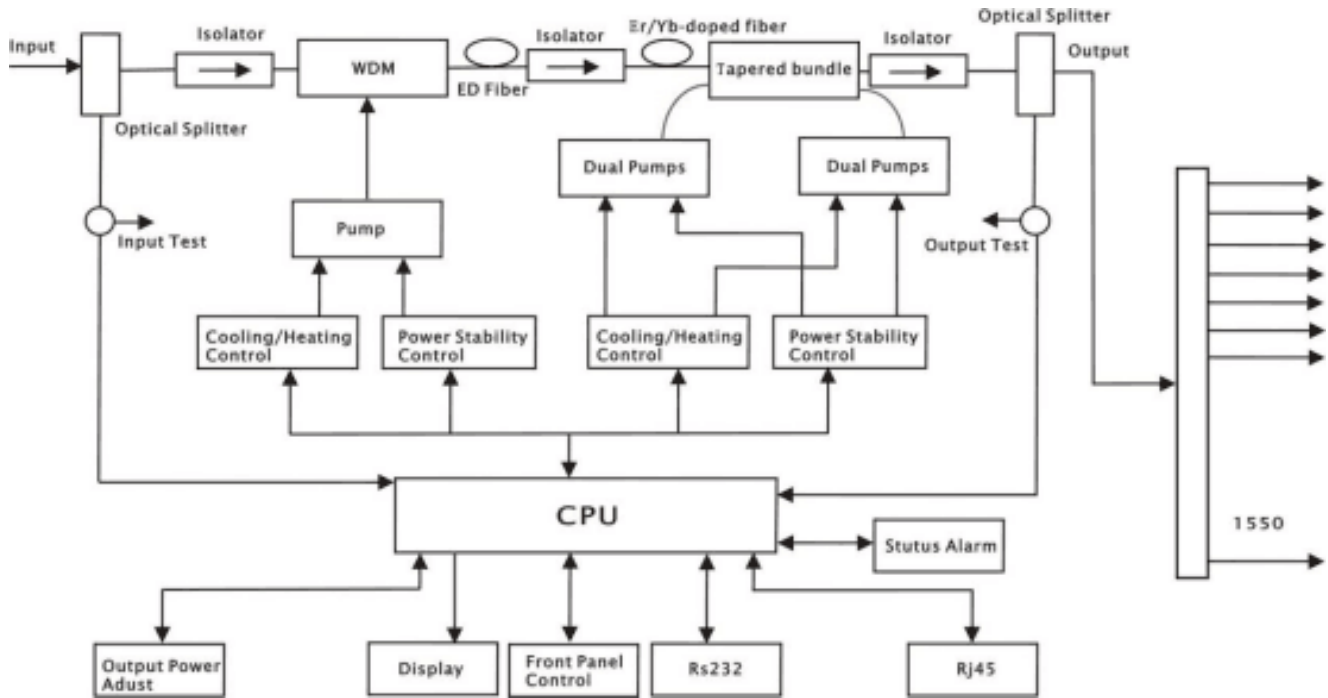
Description

The PTA5102Y-16 Series Ytterbium and Erbium Doped Fiber Amplifiers (YEDFA) is designed for use in CATV, FTTX and HFC application. It is optimized for 1550nm wavelength and is packaged in a 2U 19" rack housing. The product offering is flexible enough to perform all the requirements of CATV, FTTX and HFC applications. The device chooses a high performance PUMP laser and circuit (include ACC and APC) and optical output power is adjustable and flexible for network link loss budget. The PTA5102Y series also provide monitors and associated alarms for all vital characteristics. The status and management of the device can be monitored and managed either from the LCD front panel display & Web or remotely via Ethernet based-SNMP. The device also support multipul optical output by build-in PLC splitter and FWDM (1310nm\1490nm) optical multiplexer for Triple-play FTTX network applications.

Feature

- Standard 19 inch 2U Rack YEDFA
- 16 output ports
- Output powers range from 16*16&16*19&16*22dBm
- Output power adjustable -3~0Db
- Wide input dynamic range(-3to +10dBm)
- High Isolated input & output(30dB for max)
- Web browser management
- Automatic Power Control (APC) or Automatic Current Control (ACC)
- LCD Panel Status Indicator for local monitor
- Remote management via SNMP (Ethernet Interface)

Diagram



Specifications

Description	Unit	Value	Conditions / Notes
Optical Specifications			
Fiber connector	nm	TVinput:1550nm Output:1550nm SC/APC	
Input Power	dBm	-3~+10 1550nm	recommend +2~+10dBm
Output Power	dBm	16*16,16*19,16*22	@+6dBm Input
Laser Bias current	Pump	16*16dBm 3100mA±200mA @+6dBm input	Alarm range: Out of 1800mA~4600mA
Laser Bias current	Pump	16*19dBm 3300mA±200mA @+6dBm input	Alarm range: Out of 1500mA~4800mA
Laser Bias current	Pump	16*22dBm 3100mA±200mA @6dBm input	Alarm range: Out of 1800mA~4600mA
Output Power Stability	dB	0.1	@+6dBm Input
Noise Figure	dB	4(max 5)	@+6dBm Input
Isolation (Input/Output)	dB	30	
Return Loss (Input/Output)	dB	55	
Polarization Dependent Gain	dB	max 0.5	
Polarization Mode Dispersion	ps	max 0.5	
Electrical Specifications			
Communication Interface		RJ45, RS-232	9600bps
Input voltage	VAC	1pc 220V	1PC -12 V DC
Consumption	W	15 maximum	
Fuse	A	2	
Connector	IEC	Male power connector	
Environmental Specifications			
Operating Temperature	°C	-5 ~55	
Storage Temperature	°C	-25 ~70	
Storage Humidity	RH%	≤95	No Condensation

Description	Unit	Value	Conditions / Notes
Mechanical Specifications			
Dimension (LxWxH)	mm	483 × 422 × 88	Carton:590 × 590 × 200
Weight	kg	Net weight 11.5,	gross weight :14.8
Mounting		19" EIA rack, 2U Rack	

Installation

1. Unpack

- Check the package for obvious damage.
- Take out the device from the package.
- Check the appearance of the equipment for damage caused by transportation.
- If any damage occurs, please informed the shipping company and local agency in written form.
- Keep the package and the insertion for future upgrades or repairs.

Note: When the device returns to the factory, any damage caused by not using the original packaging will be considered as the responsibility of user.

2. Assembly and Power Connections

1. Place the device in a 19-inch wide rack or equipment cabinet with 1.75-inch (approximately 4.5 cm) spacing between the upper and lower equipment.
2. According to the design requirements, our company's maximum power 1550nmEDFA can work in the temperature range of 0 °C ~ 50 °C. An ambient temperature of 25 °C and humidity which is no more than 95% (non-condensing conditions) is recommended. If necessary, the equipment should maintain proper temperature and humidity within these limits. It is recommended that this equipment be operated in a low dust environment.
3. The device can be powered by AC or regulated DC. When the AC and DC power supplies are used, the AC power is the main power source.

The power requirements are as follows:

AC input	94-245 VAC, 50-60 Hz
DC input	36-60 VDC, floating
Power consumption	up to 50 W

4. The DC input power to the device must be the SELV source specified in CAN/CSA C22.2, No. 950-95.
5. This device should have good grounding and the grounding resistance should be < 4Ω.

Note: Use a large size (#20 AWG, or larger) wire to connect the chassis ground stud to the grounded equipment rack before connecting the circuit. When using DC input power, the chassis must be grounded.

3. Optical Port Connection

1. Clean all optical connectors before connecting the transmitter.
Cleaning steps:

Fiber Patch Cord Connector

- Remove the fiber connector dust cap and wipe the connector. Use a microscope (100X or 200X) to check the end of the connector for scratches or debris.
- If there are no scratches or debris, the connector is clean and ready for use. If scratches or debris are found, repeat the fiber patch cord connector cleaning procedure.

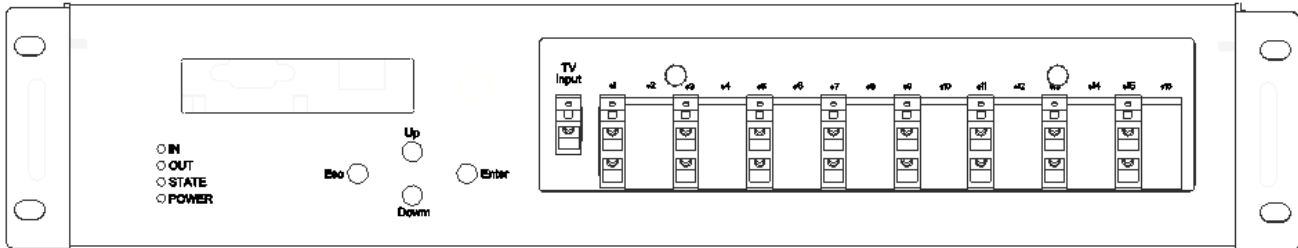
Fiber optic connector on the rear panel of the transmitter

- The connector can be cleaned with compressed air cleaning connector due to the protection of plastic sleeve. Compressed air should meet the following requirements:
 - Use inert gas to achieve complete dust removal.
 - High precision filtration to achieve < 0.2 microns.
 - Recommended for use in optical systems.
 - Using compressed air that meets the above requirements. Uncover the dust cover of the plastic sleeve so that the nozzle of the compressed air container is approximately 6 feet away from the connector. Spray several times against the plastic sleeve so that the connector should be clean and ready for use.
- If there is no compressed air, the transmitter's fiber optic connector can be cleaned with a 2.5mm cotton swab, or the connector gasket can be removed to directly clean the fiber optic connector inside.

Cautious: Handle the fiber carefully. When removing the fiber connector gasket, do not operate the fiber beyond the tensile and bending radii defined in the specification.

- To remove the connector gasket, unscrew the screws on the left and right sides of the gasket. Do not screw the bolt with plastic sleeve on the gasket.
 - Slowly remove the connector pads from the rear panel of the transmitter and then remove each fiber connector from the plastic sleeve.
 - Clean each connector by the method of cleaning the fiber patch cord connector.
2. Verify that the laser button switch on the front panel of the transmitter is in the off position.
 3. Use two fiber patch cord, one connected to the output of the transmitter and the high-power fiber amplifier, and the other connected to the output of the High Power Optical Amplifier and an optical power meter.
 - 4 Use an optical power meter to ensure that the transmitter's output optical power is within the rated range.
 - 5 Turn on the transmitter's laser button switch and then turn on the High Power Optical Amplifier electronic switch.

Control Front Panel Display and Alarms



Outline the menu of High Power Optical Amplifier. For the description of all instructions, please refer to the panel shown below. Through the buttons on the right side of the LCD screen, you can scroll through all the menus of the large light.

1. Panel Menus and Operations

1. Boot Sequence

- A. Plug in the power cord
- B. Turn on the rear panel power switch. The first line of the front panel displays “The Machine Model” and the second line displays “PTAXXXX-XX-XX”.
- C. Press the “up” menu switch button to switch the menu to the laser switch status menu. That is, the first line of the menu displays “Laser Key State” and the second line displays the position of “OFF”. Press the “Enter” button and then press the “ESC” button. At this time, the second line on the front panel displays “Set: OFF”. Then press the “up” key or the “Down” key to set the switch to the open state, “Set: ON”. Finally, press the “ESC” key to save and exit the setting. Now, the second line of the front panel displays “ON” to indicate that the switch is on, and the LED corresponding to OUT changes from red to green.

2 .Launch the Main Menu

Press the “up” button to scroll up the menu and press the “up” button to display the following main menus in sequence.

Menu #1 - Descriptor
Equipment Model

Menu #2 - S/N
Product Serial Number

Menu #3 -Version: 2.4.1
Program Version Number

Menu #4 -Rated Output Power
Rated Output Power

Menu #5 -Set Output Power
xx.x dBm

Menu# 6 -Laser Key State
Laser Key State

Menu #7 -Pin:
Input Optical Power

Menu# 8- Pout:
Output Optical Power

Menu#9 -LD BIAS
Pump1 Bias Current

Menu#10 -COOL CUR
Pump1 Cooling Current

Menu#11 -LD TEMP
Pump1 Temperature

Menu#12 -LD BIAS
Pump2 Bias Current

Menu# 13 -Power_1 +5V
Power Supply 1 Voltage

Menu# 14 -Power_2 +5V
Power Supply 2 Voltage

Menu# 15 -Temperature in Box
Machine Temperature

Menu#16 -IP ADDR:

IP address

Menu#17 -IP GATEWAY

IP gateway

Menu#18 -IP MASK

Subnet Mask

3 Menu Operation

A. Key Settings

1> Switch the menu to the Laser Key State display page.

2> Press the “Enter” key and then press the “ESC” key, then press the “up” key or the “Down” key to switch the switch state.

3> Press the “ESC” key to save and exit the settings.

B. IP address Settings

1> Switch the menu to the IP address display page.

2> Press the “Enter” key and then press the “ESC” key to enter the IP setting state. At this time, the cursor will flash. Press the “Enter” key to adjust the bit segment, press the “Up” key or the “Down” key to modify the position of the cursor.

3> After setting, press “ESC” to save and exit the setting.

Troubleshooting

High power optical software monitors system operation, provides short notes on warnings, and have the ability to correct most device state deviations. For example: system parameter drift, device error, laser aging, and temperature change. The PUMP laser will continue to operate when it issues a warning; the warning can be eliminated by continuous self-test of the equipment or restoration of the relevant system parameters to the normal range. Some serious alarms can be eliminated by turning the power off and on again. If the relevant parameters return to the normal range, the alarm will automatically disappear.

Most of the warnings are triggered when the error correction capability approaches or exceeds its capability range. In most cases, users cannot correct these statuses. State correction requires specialized equipment and facilities, and these statuses can only be corrected when returning to the original factory.

1. Warning Status

When the PUMP laser is in the warning state, the status LED will turn red and a brief description of the status will be displayed. Warnings generally do not stop the device, only show that the relevant parameters are slightly out of range. If the warning state is stopped, it means that the relevant parameters return to the allowed range and the display and LED will return to their normal state without user intervention. It should be emphasized that the problem indicated

by the warning should not be ignored, and there may be lurking serious system failures.

Working Status	Status Display	LED Color	Description
Low Current Laser Bias	Key off	Red	The machine is not working, it is in the off state
Chassis Temperature	-	Red	Above 55°C Alarm
Input	Input Low	Red	Low Optical Power Output
Output	Output Low	Red	Low Optical Power Output

Figure 5-1 Warning Message

2. Alarm Status

When the PUMP laser alarms, it usually stops working. The alarm may occur while a related parameter is outside its safe working range, or a situation has caused damage to the laser. Some alarms can generally be eliminated after several power switch operations. For alarms that users cannot exclude themselves, please contact our company immediately.

3. Failure prevention

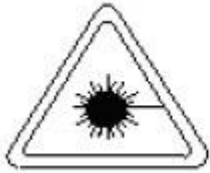
Users can prevent many potential problems by paying attention to the following information:

1. Place the PUMP laser in an operating range where the ambient temperature is between 0 °C and 50 °C and other conditions meet the requirements. It is recommended to place the Optical Amplifier in a low dust environment.
2. Ensure that the rear panel fan and front panel socket holes are clear, and the rear panel fan is running.
3. Check that the voltage of power supply is within the specified standard and that all connections are correct.
4. Keep the fiber connector clean and reliable, and prevent light leakage from causing a decline in the output optical power.

Warning

- The laser light source on this class 3B laser product emits invisible laser radiation.
- Direct viewing the optical signal input interface within a short distance may pose an eye hazard.
- Please do not clean the optical signal input interface during lighting.
- Reliable grounding and should be protected by static ESD during operation.

- Connect the optical fibers of all ports before power on.
- The optical connector cannot be plugged or unplugged while the machine is working.
- The machine cannot move or shake while working.



INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT:



CAUTION-USE OF CONTROLS OR
ADJUSTMENTS OR PERFORMANCE
OF PROCEDURES OTHER THAN
THOSE SPECIFIED HEREIN MAY
RESULT IN HAZARDOUS
RADIATION EXPOSURE

